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# Siege™ Vascular Plug: A New Microcatheter Deliverable Vascular Plug

*Gurumurthy Hiremath, MD, FACC, FSCAI, FPICS*

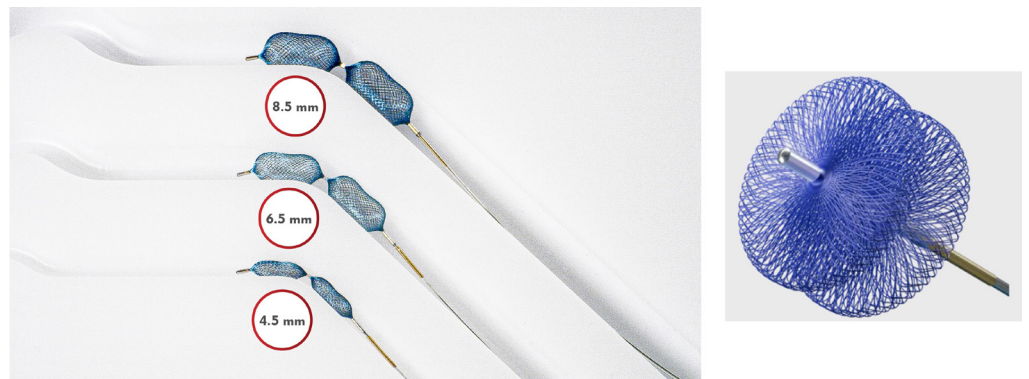
## Introduction

Children with Congenital Heart Disease (CHD) often develop abnormal blood vessels that may require transcatheter embolization. Notable examples of these are aorto-pulmonary collaterals (APCs) and venovenous collaterals (VVCs) found in children after single ventricle palliative surgeries. A variety of coils and particles have been used in these indications. The MVP™ micro vascular plug (Medtronic) was introduced in 2013 for peripheral vascular embolization. Its microcatheter compatibility was appealing and was soon adopted by congenital interventional cardiologists and has been used effectively for embolization in various scenarios, ranging from collateral vessel treatment to occlusion of the premature patent ductus arteriosus. Microvascular plugs are often used in conjunction with coils and particles to close collateral vessels in single ventricle disease. Here, we introduce a new microcatheter-deliverable vascular plug with unique properties that are highly valuable.

## Siege™ Vascular Plug

The Siege™ Vascular Plug (Merit Medical, South Jordan, UT, USA) is a self-expanding bi-lobed vascular implant offered in three sizes designed for peripheral arterial embolization in vessels measuring 1.5–6.0 mm in diameter (**Figure 1**). The plugs are constructed from densely-braided nitinol wires for rapid occlusion with each plug having a defined treatment range. Unconstrained lengths range from 7–9 mm and fully constrained lengths range from 20–36 mm when measured end-to-end (**Table 1**). The 4.5 & 6.5 mm sizes are compatible with 0.021–0.027-inch microcatheters and the 8.5 mm size is compatible with 0.027-inch microcatheters (**Table 2**). Highly visible radiopaque markers are provided on the distal and proximal ends of the plug, as well as at the distal end of the delivery wire, for easy fluoroscopic visualization and precise placement. All plugs are connected to the delivery wire with mechanical threads and are fully repositionable or recapturable. A torque

**FIGURE 1** Siege Vascular Plug





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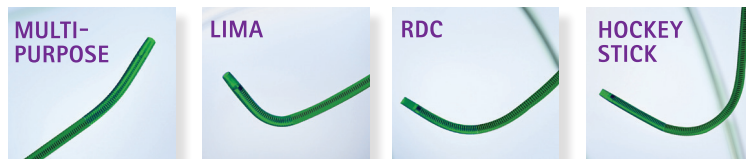
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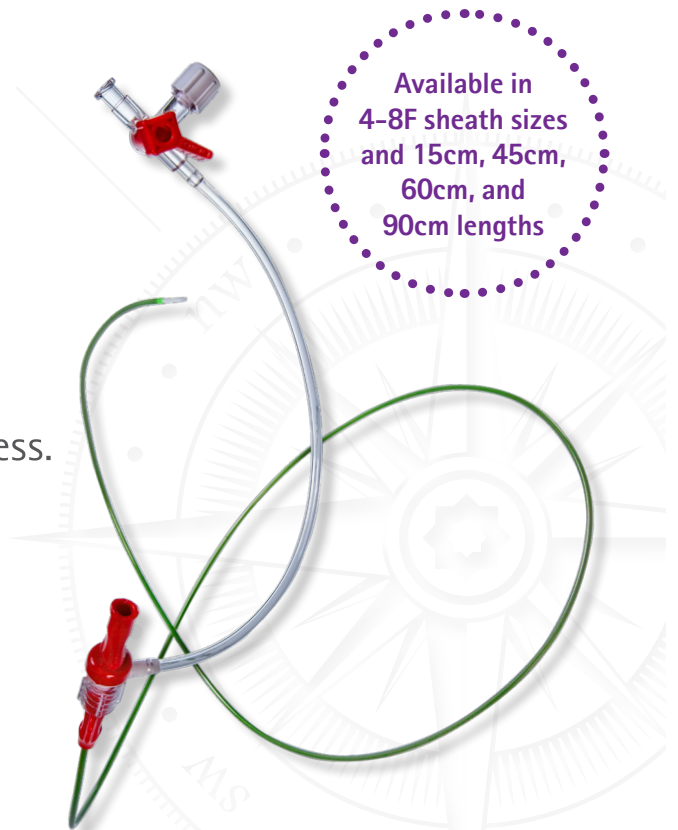
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TABLE 1 Plug diameters, treatment range and unconstrained / constrained lengths

Actual Plug Diameter	Minimum Artery Diameter	Maximum Artery Diameter	Unconstrained Length*	Fully Constrained Length*
4.5 mm	1.5 mm	2.5 mm	7 mm	20 mm
6.5 mm	2.5 mm	4 mm	8 mm	30 mm
8.5 mm	4 mm	6 mm	9 mm	36 mm

\* Approximate - measured end to end

TABLE 2 Microcatheter compatibilities

COMPATIBILITY INFORMATION

Description	Catalog Number	Minimum Inner Diameter	Maximum Length
Boston Scientific Renegade™ STC 18 (2.4F/3.0F)	SVP2.5-0.021	0.021"/0.533 mm	175 cm
Medtronic Rebar™ (2.4F/2.7F)			
Merit Medical SwiftNINJA® (2.4F/2.6F–2.9F)			
Stryker Trevo® Pro 18 (2.4F/2.7F)			
Terumo PROGREAT® (2.4F/2.9F)	SVP4-0.021	0.021"/0.533 mm	175 cm
Boston Scientific Renegade™ HI-FLO™ (2.8F/3.0F)			
Medtronic Rebar™ (2.8F/2.8F)			
Stryker Excelsior® XT-27® (2.7F/2.9F)			
Terumo PROGREAT® (2.8F/3.0F)			

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device is attached to the proximal end of the delivery wire and rotated in a counter-clockwise direction for detachment.

Case Example

An 18-year-old male with Hypoplastic left heart syndrome (HLHS) and failing Fontan physiology was found to have significantly elevated Fontan pressures and chronic desaturation on cardiac catheterization. Angiography revealed the presence of significant aorto-pulmonary (AP) collaterals to both lung fields as well as veno-venous (V-V) collaterals from the superior vena cava to the right pulmonary veins. Baseline angiography performed with an angiographic catheter in the right and left subclavian arteries demonstrated multiple AP collaterals supplying bilateral lung fields, including the right internal mammary artery (IMA) and thyrocervical trunks (Figure 2). Three AP and one V-V collateral were embolized using a combination of Azur® coils (Terumo Interventional Systems), Siegel™ Vascular Plugs (Merit Medical), and a MVP™ micro vascular plug (Medtronic).

The AP collateral network arising from the right IMA was engaged with a coaxial system of 4 fr Judkins right (JR 3.5) catheter, 0.027-inch PROGREAT® microcatheter (Terumo Interventional Systems), and a 0.018-inch Hi-Torque II™ floppy wire (Abbott). Care was taken to advance the microcatheter as distally as possible. Angiography performed in the distal artery showed immediate flow to the pulmonary veins (Figure 3A)—the artery at the distal end measured approximately 1.5 mm. A 4.5 mm Siegel vascular plug was prepared per manufacturer instructions. It was advanced to the distal end of the AP collateral at the appropriate location, and the microcatheter was withdrawn to deploy the plug. The distal radiopaque marker on the delivery wire added to the improved radiopacity of this vascular plug (Figure 3B). Repeat angiography performed after release showed complete and immediate occlusion (Figure 3C). The entire length of the right internal mammary artery, which was supplying the collateral, was then

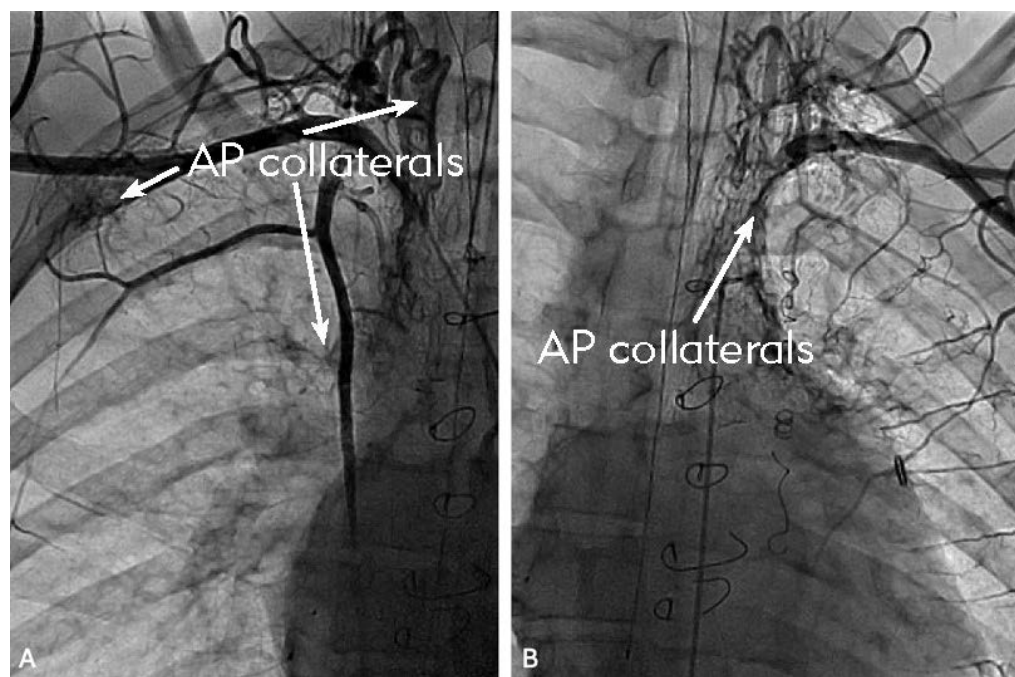


FIGURE 2 Baseline angiography performed in right (Panel A) and left subclavian arteries (Panel B) shows extensive network of AP collaterals from IMA and thyrocervical trunks to both lung fields (arrows).



embolized using a total of five 60 cm long AZUR HydroPack™ coils (Terumo Interventional Systems) through the same microcatheter (Figure 3D).

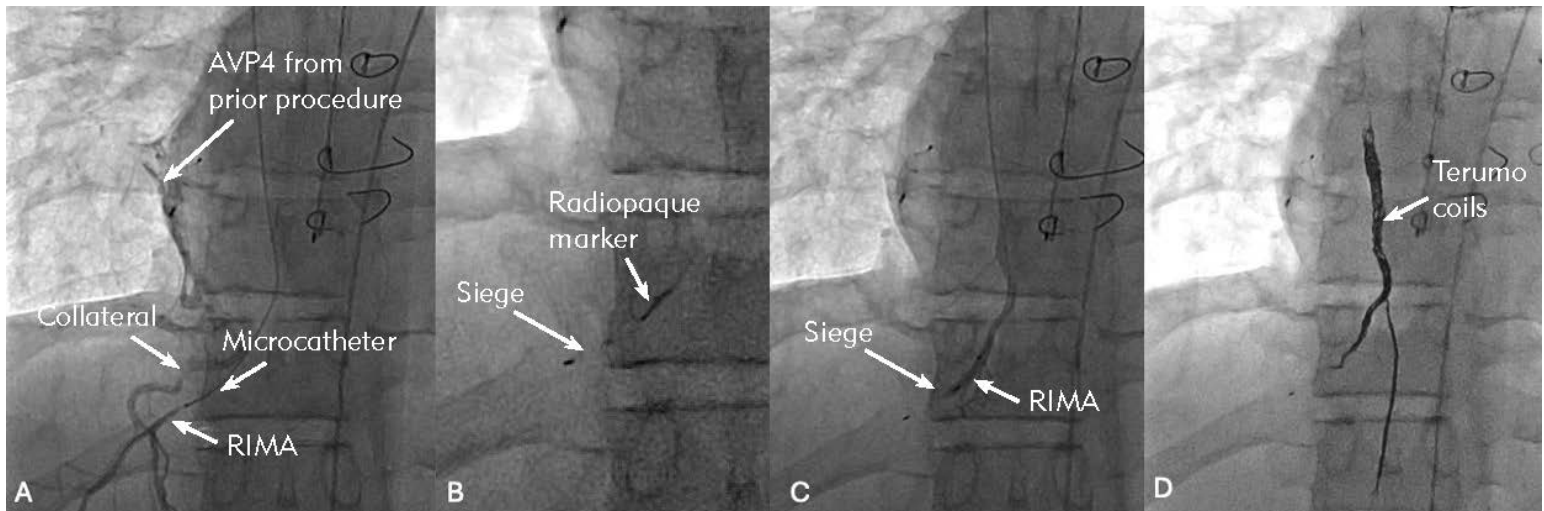
A similar coaxial system of 4 French JR catheter and PROGREAT® microcatheter (Terumo Interventional Systems) was used to engage the complex network of aortopulmonary collaterals arising from the left thyrocervical trunk. Initial angiography showed multiple distal

feeders to the left lung field (Figure 4A). The proximal feeder vessel measured approximately 2.5 millimeters in diameter. The distal feeder vessels were first occluded by selectively entering at least two branches of the collateral network using one Azur® CX coil (Terumo Interventional Systems) 0.018-inch 2 mm x 4 cm, two each of AZUR HydroPack™ coil (Terumo Interventional Systems) 0.018-inch 10 cm long, and one AZUR HydroPack™ coils (Terumo Interventional

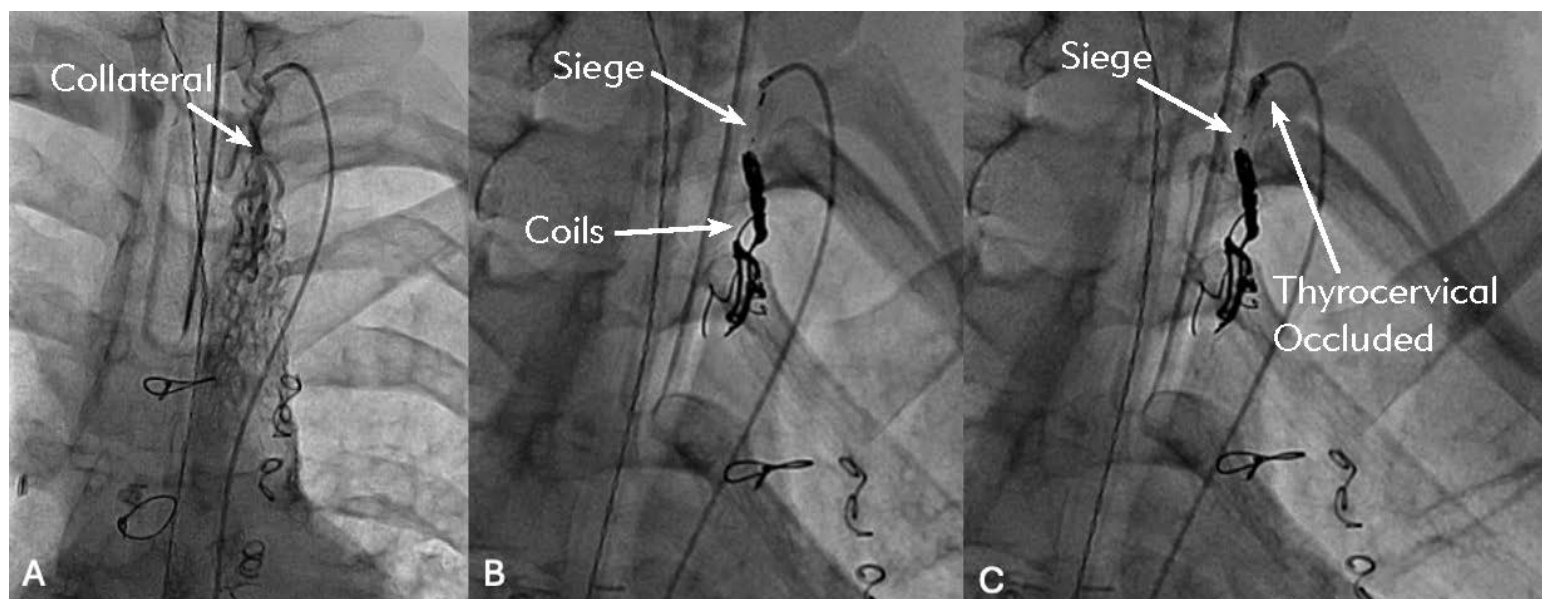
Systems) 0.018-inch 20 cm coil. The proximal end of the aortopulmonary collateral was then 'capped' with a 4.5 mm Siege vascular plug (Figure 4B). Angiography confirmed stable plug position with no residual flow (Figure 4C).

## Discussion

Aortopulmonary collateral blood vessels (APCs) are frequently found in patients



**FIGURE 3** RIMA AP collateral to right lung – distal Siege™ Vascular Plug placement using 0.027-inch PROGREAT® microcatheter, followed by packing using AZUR HydroPack™ packing coils. Panel A shows selective angiogram using the microcatheter in the distal artery, with flow to right pulmonary veins, arterial end measured 1.5 mm. Panel B shows distal radiopaque marker of the pusher wire connected to the Siege plug. Excellent distal occlusion was noted (Panel C). Further filling of the length of the vessel was performed with five of the AZUR HydroPack™ 0.018-inch coils each 60 cm in length.



**FIGURE 4** Left Thyrocervical AP collateral to left lung – proximal Siege™ Vascular Plug placement. A large network of AP collaterals was noted (Panel A), measuring 2.6 mm proximally. It was successfully occluded with Azur® CX coils 0.018-inch 2 mm x 4 cm, two each of AZUR HydroPack™ 0.018 inch 10 cm long, one AZUR HydroPack™ 0.018-inch 20 cm followed by Siege™ Vascular Plug 4.5 mm proximally (Panel B). Final angiogram showed absence of any residual flow (Panel C).



with single-ventricle heart disease, with their extent varying after surgical procedures. Though the APCs increase pulmonary blood flow, they also load volume to the ventricles and are inefficient because much of the flow is ineffective. The traditional treatment has involved coil/particle occlusion of the feeding vessel. As a general principle for optimal vessel closure, these vessels are occluded as distally as possible and filled back to the feeding vessel with the goal of filling the entire collateral to minimize recanalization. The availability of newer microcatheter-deliverable packing coils that are long (up to 60 cm) makes filling vessels the whole length possible. Leaving the packing coils 'uncapped' at the proximal end may sometimes result in the proximal loops of the coil unraveling and dislodging into the adjacent normal feeding artery. In the author's experience, 'capping' the proximal end with a plug or a shaped coil can prevent this complication. The availability of vascular plugs that can be delivered through the same microcatheter used to deliver the coils avoids catheter exchange and aids usability.

The Siegel Vascular Plug was noted to have excellent tracking ability through the 0.027-inch microcatheter despite the tortuosity. The distal radiopaque marker on the delivery wire, along with the two radiopaque markers on the plug, add to the ease of visualization. Despite anticoagulation, the plug was immediately occlusive in both vessels. Potential advantages are the ability to close vessels up to 4 mm using 0.021-inch microcatheters and up to 6 mm vessels using 0.027" microcatheters as well as the ability to conform and still be occlusive in tortuous vessels due to the flexible braided construction.

## Conclusion

The Siegel Vascular Plug, with its excellent deliverability through a microcatheter, stands out for its rapid occlusion as well as ease of positioning and release with simple-to-recognize fluoroscopic markers and improved visibility. It is a great addition and expands the interventionalist's toolbox in taking care of these complex patients with Congenital Heart Disease.



### GURUMURTHY HIREMATH, MD, FACC, FSCAI, FPICS

*Associate Professor & Associate Division Director, Division of Pediatric Cardiology Director, Congenital Cardiac Catheterization Faculty, Department of Pediatrics Care Team Member, Heart Center Forrest H. Adams Chair, Pediatric Cardiovascular Health University of Minnesota Masonic Children's Hospital Minneapolis, MN, USA*  
**hiremath@umn.edu**



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# Camp is Good Medicine

Sara Creighton, MD

Camp is Good Medicine. As a pediatric cardiologist, I know the ins and outs of medical and surgical therapy for my patients with congenital and acquired heart disease. Through my experience working with Camp Odayin, I have realized that beyond what we do in the hospital and clinics, camp experiences can improve the wellness and mental health of our patients.

Camp Odayin provides camp experiences for young people with heart disease in a medically safe and supportive environment while also creating community building opportunities for kids that may not know many others like them. Their “special hearts” become a badge of honor and connect them with others who are experiencing the same medical challenges during a time in their lives when relationships, fun and acceptance are vitally important. The mission encompasses a holistic approach to healing by supporting the entire child’s wellbeing.

It is well known that young people with heart disease often are at higher risk for anxiety and depression as well as trauma. The goal of Camp Odayin is to improve the quality of life, mental health and overall well-being of our campers. Surveys of our campers showed 57% of campers self-report having been diagnosed with a mental health condition with 52% reporting improvement in their mental well-being by attending a one week residential camp. Parents also noted this change with 65% reporting sustained improvement in their mental health six months later.

As a camp doctor, I get to live these experiences when I see my patients as campers acting like any other kid. And I also can bridge the chasm of camp and the doctor’s office by participating in the talent show and then also visiting them in the hospital. I get to make doctors human and less scary because campers see us get messy and be silly.

We know beyond the campers; heart disease affects the entire family. There is anxiety and trauma for parents and siblings as well. Camp Odayin aims to support these families with Family Camps and parent retreats.

Overall, as a pediatric cardiologist and Camp Doc, I know that Camp is good medicine and changes the lives of all that get to encounter this amazing organization. I encourage all my patients to have this experience.

Our Pay-What-You-Can (PWYC) model for camp registrations supports our commitment to make our programs accessible to everyone in our community. There is always an option to pay \$0. We provide bus transportation to camp from Minneapolis, Milwaukee & Chicago, and we also offer a travel stipend to families who need financial assistance.



Visit [www.campodayin.org](http://www.campodayin.org) to learn more!



**SARA CREIGHTON, MD**

Assistant Professor, Pediatric and Fetal Cardiology  
Medical College of Wisconsin  
Herma Heart Center  
Children’s Wisconsin  
Milwaukee, WI, USA  
[screighton@childrenswi.org](mailto:screighton@childrenswi.org)



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As the Director of Fetal Cardiology, you will lead a dedicated team in providing exceptional care to expectant mothers and their unborn babies facing complex cardiac conditions. This role offers a unique opportunity to make a difference in the lives of families by providing advanced diagnostic and therapeutic interventions for fetal heart abnormalities.

#### Responsibilities Include:

- Develop outreach fetal screening opportunities with a growing neonatal/MFM network
- Provide inpatient care, opportunities for transthoracic and transesophageal echo
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#### Qualifications and Experience Include:

- MD degree or equivalent from an accredited school of medicine with 3+ years of fellowship training in pediatric cardiology + additional year of training in advanced congenital cardiac imaging and fetal echocardiography
- 5+ years of pediatric echocardiography experience with expertise in imaging and management of fetal cardiology patients and mothers
- Unrestricted medical license and American Board of Medical Specialties (ABMS) board certified in pediatric cardiology

### Pediatric Cardiologist, Fetal Specialty

This BC/BE Pediatric and Fetal Cardiologist will have a strong desire to develop a community-based general pediatric cardiology practice with an emphasis on fetal cardiology. The candidate would collaborate with local hospitals and neonatology practices and provide personalized services to pediatricians, family practice providers, and maternal-fetal medicine specialists in these communities, with a focus on growing the practice within the region.

#### Responsibilities Include:

- Develop and maintain a community-based general pediatric cardiology practice with an emphasis on fetal cardiology.
- Collaborate with local hospitals and neonatology practices.
- Provide personalized cardiology services to pediatricians, family practice providers, and maternal-fetal medicine specialists.

#### Qualifications and Experience Include:

- Board-certified/board-eligible in Pediatric Cardiology.
- MD degree or equivalent from an accredited school of medicine with at least three years of fellowship training in pediatric cardiology.
- Strong commitment to community-based healthcare.

### Pediatric Cardiac Intensivist

The Pediatric Cardiac Intensivist will report to the Medical Director of the CICU and work in close collaboration with cardiologists, cardiac surgeons, intensivists, and healthcare professionals to deliver state-of-the-art critical care to patients with complex cardiovascular conditions.

#### Responsibilities Include:

- Provide comprehensive, evidence-based critical care for pediatric patients with congenital and non-congenital cardiovascular conditions in the Cardiac ICU (CICU).
- Conduct thorough evaluations, diagnostic assessments, and treatment planning, including mechanical circulatory support and perioperative management.
- Engage in quality improvement and patient safety initiatives to enhance outcomes and efficiency within the CICU.

#### Qualifications and Experience Include:

- MD degree or equivalent from accredited school of medicine
- Fellowship training (three years) in Pediatric Cardiology or Pediatric Critical Care Medicine with
  - One year of Fellowship training in Pediatric Cardiac Critical Care OR
  - Dual Fellowship training in Pediatric Cardiology and Pediatric Critical Care Medicine
- Unrestricted medical license and board certification by the American Board of Medical Specialties (ABMS) in Pediatric Cardiology
- Eligibility for medical licensure in the state of Florida

Nicklaus Children's Hospital Heart Institute is a renowned center of excellence dedicated to providing world-class cardiac care to pediatric patients. With state-of-the-art facilities and a multidisciplinary team of experts, we deliver comprehensive, compassionate, and cutting-edge care to children with congenital and acquired heart conditions. The Heart Institute offers a wide range of services including the management of patients requiring complex congenital heart surgery, interventional catheterization, invasive electrophysiology, non-invasive imaging (fetal and cardiac MR/CT) and preventive cardiology. Our pediatric cardiology and cardiovascular surgery services are ranked among the nation's best for by U.S. News & World Report.

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**Danyal Khan, MD**

*Interim Chief, Cardiology*

Nicklaus Children's Hospital Heart Institute

[Danyal.Khan@nicklaushealth.org](mailto:Danyal.Khan@nicklaushealth.org)

DFW



# A Heartfelt Mission: The Inspiring Partnership of Drs. Kevin Shannon & Heatherly Vandeweghe

*Emily Earhart, Director of Development & Communications, Camp del Corazón*

For Drs. Kevin Shannon and Heatherly Vandeweghe, life's guiding principle has always been simple: "When you do the right thing, the right thing tends to happen." This philosophy has shaped their careers in pediatric medicine and their shared mission to uplift children with heart disease. Through decades of compassionate care, global outreach, and joyful service at Camp del Corazón, they've created a legacy of kindness, commitment, and community.

## Doing the Right Thing in Medicine

Dr. Kevin Shannon, Clinical Professor of Pediatric Cardiology and Director of Pediatric Electrophysiology at UCLA's School of Medicine and Medical Center, has dedicated his career to children with heart disease and heart rhythm disorders. His unparalleled expertise and dedication have transformed countless lives. As Kevin retires from UCLA in June 2025, after 38 remarkable years, his commitment to helping children continues at Camp del Corazón.

Dr. Heatherly Vandeweghe, a pediatrician for over 36 years, has brought warmth and empathy to every patient she has cared for. Her quiet strength and steadfast advocacy for children's health have left an indelible mark on her community. Heather remains an inspiring presence, always stepping in where her support is needed most.

## Camp del Corazón: A Place Where the Right Things Happen

In 1995, Kevin and nurse Lisa Knight co-founded Camp del Corazón, a free-of-charge, medically-supervised residential summer camp on Catalina Island. Their vision was to create a safe and joyful space where children with heart disease could feel like normal kids and make friends who have similar experiences and concerns. From its humble beginnings, Camp del Corazón has grown into a vibrant community serving over 300 children each summer and offering year-round programs to more than 650 families and young adults.

Heather has been a pivotal supporter since the camp's inception, helping foster its nurturing and inclusive environment. Together, Kevin and Heather embody the spirit of Camp del Corazón through their playful alter egos, "Big Kahuna" and "Feather." Whether leading snorkeling adventures, serving as cabin counselors, offering medical care, or lip syncing to Sonny and Cher, their presence underscores the camp's essence: healing through joy, laughter, and belonging. "Camp is where kids can

be themselves without feeling different," Heather says.

As husband and wife, their lifelong dedication to the Congenital Heart Disease community is a family value. They raised three children while running Camp del Corazón, and today, all three are volunteer counselors and lifeguards, continuing the family tradition of giving back.

## Global Service: Bringing Healing to the World

Kevin and Heather's dedication extends far beyond Camp del Corazón. Through their work with the Gift of Life organization, they have provided life-saving cardiac care to children in underserved regions worldwide. Their humility, compassion, and determination have given countless children a second chance at life while strengthening communities globally.

## A Celebration of Service: The Gala del Sol - April 5, 2025

This April, Camp del Corazón will celebrate its 30th anniversary with the Gala del Sol, honoring Kevin and Heather for their extraordinary contributions. This milestone event will be especially poignant as Kevin prepares to retire from UCLA. It is an opportunity to celebrate not only their professional accomplishments but also the profound humanity they bring to every endeavor.

Join us on April 5th at the Gala del Sol in Los Angeles to celebrate 30 years of Camp del Corazón and honor Kevin and Heather's incredible work. If you are unable to attend, please consider donating, sponsoring, or providing a tribute to honor their legacy. Your support will help ensure that more children with heart disease experience the joy and belonging they deserve.







**SAVE THE DATE**

**Gala del Sol**



Honoring Dr. Kevin Shannon  
& Dr. Heatherly Vandeweghe

**SATURDAY APRIL 5, 2025**

-Herscher Hall at The Skirball Center

### Event Details

- Date: April 5, 2025
- Time: 6:00 PM – 10:00 PM
- Location: Herscher Hall, Skirball Center, Los Angeles, CA



Don't miss this heartfelt evening of celebration and appreciation. Your sponsorship or donation will ensure Camp del Corazón's programs remain free-of-charge to children and young adults with heart disease. Learn more about how you can be a part of this incredible night at <https://www.campdelcorazon.org/gala>.

Questions? Please contact: [gala@campdelcorazon.org](mailto:gala@campdelcorazon.org).



## Pediatric Cardiologist

Springfield, Missouri

The Ward Family Heart Center at Children's Mercy Kansas City seeks a candidate to join our team as a pediatric cardiologist based at our CMKC owned practice in Springfield, MO. The successful candidate would join an existing group of 38 cardiologists (33 in Kansas City, 2 in Springfield, MO, 2 in Wichita, KS, 1 in Topeka, KS), 4 CV surgeons, and over 30 APNs. Experience and interest in outpatient cardiology and outreach is a must. Trainees in their final year are welcome to apply.

Candidates must be board-certified or board-eligible in Pediatric Cardiology. Strong communication skills are key. Salary and academic rank are commensurate with experience.

Springfield, Missouri is located in Southwest Missouri and has a rich and diverse history. It was founded in 1829 and is the third most populous city in the State of Missouri. The city has a plentiful and growing job market, great schools, world-class health care, and all the entertainment and cultural options of a big city—but with far less stress and an abundance of character and friendliness. The Springfield, MO based practice is the only pediatric cardiology practice in southwest Missouri, servicing 4 states. This practice sees over 4000 outpatient visits each year across 7 locations.

The Children's Mercy Heart Center serves a population of over 5 million in the heart of the U.S.A. We perform over 500 cardiac operations, 600 cardiac catheterizations including over 200 invasive EP procedures, 18,000 outpatient visits, and more than 20,000 echocardiograms annually. Our two state-of-the-art catheterization labs are both hybrid labs and equipped with the latest 3D imaging and EP technology.

Our Kansas City-based super-specialty resources include Electrophysiology (which includes Clinical EP, pacing and Genetic Arrhythmia), Cardiac Transplantation / Heart Failure, Interventional Cardiology and Advanced Cardiac Imaging (fetal echo, 3D echo, trans-esophageal echo, CT, MRI and 3D printing). We also provide specialized, team-based care in Fetal Cardiology (with on-site delivery services for high-risk neonates in Kansas City), Interstage Monitoring (CHAMP), Preventive Cardiology, Cardiac Genetics, Cardio-oncology, Single Ventricle Survivorship, Pulmonary Hypertension, a dedicated POTS clinic and Cardiac Neurodevelopmental services.

For more information or to apply, submit CV and cover letter using link below, or send to:

[physicianjobs@cmh.edu](mailto:physicianjobs@cmh.edu)

<https://faculty-childrensmerykc.icsm.com/jobs/30486/physician/job>

Aliessa Barnes, MD

Co-Director, Ward Family Heart Center;

Chief, Section of Cardiology

816.983.6225, [apbarnes@cmh.edu](mailto:apbarnes@cmh.edu)



# CAREER OPPORTUNITIES

Click the position title to view the full job description – page 1 of 2

## Adult Congenital Heart Disease (ACHD) Cardiologist

Phoenix Children's  
Phoenix, Arizona



## Pediatric Cardiologist Heart Transplant and Advanced Heart Failure

Phoenix Children's  
Phoenix, Arizona



## Pediatric Cardiologist

Banner University  
Medical Center  
Tucson, Arizona



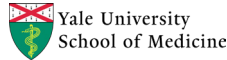
## Pediatric Cardiologist

Loma Linda University  
Children's Hospital  
Loma Linda, California



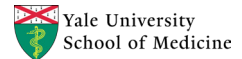
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Yale University  
Yale New Haven  
Children's Hospital  
New Haven, Connecticut



## Pediatric Cardiologist

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Yale New Haven  
Children's Hospital  
New Haven, Connecticut



## ACHD Cardiologist

Nemours Children's Hospital  
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## Medical Director

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## Director of Fetal Cardiology

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Click the position title to view the full job description – page 2 of 2


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# The SickKids Advanced Cardiology Education (ACE) Program

Alyssa Gumapac, BHSc, Communications Specialist, SickKids Learning Institute



As one of the world's leading heart centres, we here at the Hospital for Sick Children (SickKids) have an inherent responsibility to drive innovation in the treatment and management of children with Congenital and acquired Heart Disease. Through transformative research, education, international collaboration, and patient-centered care, we strive to shape the future of cardiac clinical care.

While it's easy to focus on the latest technological advancements and novel techniques, it's equally important to reflect on the historical breakthroughs that have shaped modern cardiac care. By sharing knowledge and embracing diverse perspectives, we can continue to optimize outcomes for children with heart disease—principles that lie at the heart of SickKids Advanced Cardiology Education (ACE) Program.

## The SickKids ACE Program

The SickKids ACE Program is an online course that sets itself apart from conventional pediatric cardiology continuing medical education initiatives. It offers a comprehensive 33-week curriculum, spanning two semesters, with the opportunity to earn 202 learning credits and an Advanced Certificate of Completion.

- Register now: <https://cvent.me/5Y8kQE>
- Semester 1 begins on September 5<sup>th</sup>, 2025

## What to Expect

Throughout the program, you will explore cutting-edge technologies such as Ventricular Assist Devices (VADs) which play a crucial role in bridging care for patients awaiting other

interventions, including heart transplants. Additionally, Dr. Luc Mertens, Section Head of Echocardiography and Co-Director of the Pulmonary Hypertension Program at SickKids, will review echocardiograms of single ventricular physiology—an incredibly complex subspecialty in which new surgical interventions have significantly improved infant survival rates over the last 50 years.

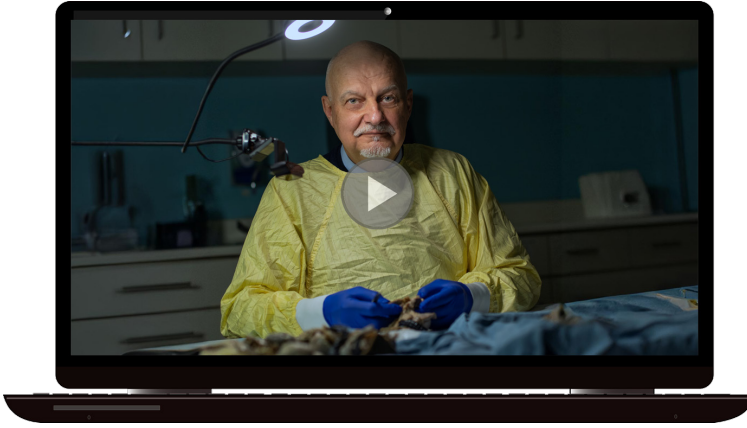
While these advancements have transformed outcomes for children with Congenital Heart Disease, early diagnosis remains one of the most powerful tools in optimizing care. Sessions such as *Fetal and Neonatal Heart and Lungs: Embryology, Anatomy, and Physiology* by Dr. Davide Marini will provide a foundational understanding of cardiac development, while Dr. Lindsay Freud's discussion on *Fetal Intervention in the Catheterization Lab*, highlights the growing role of prenatal diagnostics. Additionally, Dr. Israel Valverde, will discuss *3D Printed Models and Holograms* demonstrating how emerging technologies enhance visualization and preoperative planning.

Dr. Mike Seed, Division Head of Cardiology at SickKids, will delve into the critical role of early interventions and their lasting impact on neurodevelopment, in his talk *Fetal Hemodynamics in Congenital Heart Disease and Impacts on Brain Development*. In doing so, Dr. Seed will also reflect on key historical innovations that paved the way for modern advancements, such as the Mustard Operation (a procedure developed by Dr. William Mustard in 1966 at SickKids). By examining both past and present breakthroughs, we gain a deeper understanding of how far the field has come and how continued innovation can further improve care of children with Congenital Heart Disease.

## Strong Foundation

Just as balancing historical perspective with cutting-edge advancements is essential to progressing clinical care, a strong grasp of fundamental principles is equally as critical as exploring rare and complex conditions. At the start of the program, you can expect to review assessment skills such as heart sounds and murmurs and gain diagnostic expertise in interpreting: 15-lead electrocardiograms, cardiac MRIs and CTs, angiograms, chest radiographs and more.

Additionally, SickKids houses one of the world's largest collections of congenital heart pathology specimens. Dr. David Chiasson, Senior Staff Pathologist at SickKids, will lead a seven-part pathology series, beginning with a session on normal cardiac anatomy, laying the foundation for understanding the complexities of congenital heart disease. Building on this, you



will explore various types of septal defects, including ASD, VSD, and AVSD. From there, you will navigate the challenges of right ventricular outflow tract obstruction lesions such as PS, PA, and TOF. You will also explore left ventricular outflow tract obstruction lesions such as CoA and IAA.

The pathology series will continue with in-depth explorations of complex congenital heart defects, including D-TGA with IVS and CC-TGA. You will also examine abnormalities in pulmonary venous drainage, such as PAPVD and TAPVD. Finally, you will venture into univentricular connections, such as HLHS. With each installment, you will gain a deeper understanding of the resilience of the pediatric heart.

Dr. Amshu Shakya, Pediatric Cardiologist Shahid Gangal National Heart Centre in Nepal says: "The morphology sessions took me back to med school days, the museum of heart collection with varied pathologies was a visual retreat."

#### View all sessions:

<https://cvent.me/PmvYeD?RefId=Sessions>

#### Whole Hearts

While this course prides itself on delivering both breadth and depth in the care of children with heart disease, it is crucial to remember that technological advancements, historical insights, and comprehensive management tools must always be complemented by a holistic, patient-centered approach. This is why the SickKids ACE Program includes topics on affective considerations such as family counselling and ethical principles and dilemmas in pediatric cardiology. Empathy and compassion for the patient and their family are at the core of effective care, ensuring that treatment plans are developed through shared decision-making.



Lastly, the SickKids ACE Program brings together participants from across the globe. By incorporating international perspectives and case-based learning, we can enrich our understanding and bring diverse cultural considerations back to practice and tailor care to local contexts. By integrating clinical expertise with a deep understanding of the emotional and psychological needs of families, we can provide care that is truly transformative, not only for the child but for their loved ones as well.

- Register now: <https://cvent.me/5Y8kQE>
- Early bird deadline (up to \$400 off): July 18<sup>th</sup>, 2025
- Group rates available: <https://cvent.me/OxzNZB?RefId=Fees>
- Semester 1 begins on September 5<sup>th</sup>, 2025
- For inquiries, email: [ace.program@sickkids.ca](mailto:ace.program@sickkids.ca)



# NEONATOLOGY TODAY

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# American Society of Echocardiography and its Foundation Award \$100,000 in Grant Funding to Early Career Investigators in Cardiovascular Imaging

The American Society of Echocardiography (ASE) and the ASE Foundation have awarded grant funding totaling \$100,000 to fund four innovative cardiovascular ultrasound research projects led by early career investigators.

The Society's EDGES (Early-Career Development Grant for Echo Scientists) program funds projects that address clinical gaps in cardiovascular ultrasound through research directed by an early career scientist or investigator.

The four 2024 EDGES recipients, each awarded a \$25,000 grant, will conduct studies addressing a wide range of research projects.

Sae Jang, MD, a clinical instructor and National Institutes of Health T32 research fellow at the University of Pittsburgh Medical Center Department of Cardiology in Pennsylvania, will investigate if microbubbles and ultrasound can be developed as a diagnostic tool for early capillary structural changes in patients with microvascular disease.

James MacNamara, MD, MSCS, an assistant professor at the University of Texas Southwestern in Dallas, will utilize the grant to better understand the limitations to exercise in patients with Hypertrophic Cardiomyopathy (HCM) and how these patients respond to therapies.

David McNamara, MD, MPH, a non-invasive, board-certified cardiologist at Corewell Health in Grand Rapids, Mich., will research radiation safety during structural heart procedures and the role of radiation protection devices in clinical practice, specifically for interventional echocardiographers.

Minh Nguyen, MD, FASE, a pediatric cardiologist and assistant professor of pediatrics at Texas Children's Hospital, Baylor College of Medicine in Houston, secured the funding to develop a foundation model on pediatric echocardiograms to predict adverse events in pediatric HCM.

ASE Past President and Chair of the Society's Research Committee Jonathan Lindner, MD, FASE, shared why this funding is important for the field.

"The EDGES program represents a tremendous investment by ASE in the future of imaging research. These grants fill a major gap by supporting early career imaging scientists during a critical stage of their development by providing resources to pursue their own idea," said Dr. Lindner. "We look forward to seeing how the EDGES recipients leverage their grants to obtain



further national funding and hearing about the impact of EDGES on the upward trajectory of tomorrow's research leaders."

ASE developed the EDGES research program in 2023 to create an avenue for the continued evolution of cardiovascular ultrasound. The program's initial three recipients were each awarded \$25,000 to fund artificial intelligence and technology-focused research projects. ASE plans to offer its EDGES grants annually to support technical advancements and new applications of echocardiography.

Learn more about these grants and the recipients at [ASEFoundation.org/Research](https://ASEFoundation.org/Research).

## About American Society of Echocardiography

The American Society of Echocardiography (ASE) is the Society for Cardiovascular Ultrasound Professionals™. ASE is the largest global organization for cardiovascular ultrasound imaging serving: physicians, sonographers, nurses, veterinarians, and scientists, and as such, is the leader and advocate, setting practice standards and guidelines for the field. In 2025, ASE is celebrating its milestone 50<sup>th</sup> anniversary. The Society is committed to advancing cardiovascular ultrasound to improve lives. For more information, visit the ASE website [ASEcho.org](https://ASEcho.org) or social media accounts on Facebook, X (formerly Twitter), LinkedIn, Instagram, or Bluesky.

## About American Society of Echocardiography Foundation

The ASE Foundation (ASEF) is a 501(c)(3) nonprofit corporation created in 2003 as ASE's charitable arm. The Foundation helps to assure the viability and visibility of cardiovascular ultrasound. Dependent upon donor giving not supported by membership dues, ASEF funds initiatives such as training scholarships, guidelines-based projects, research, patient engagement, and global health outreach. For more information, visit the ASEF website [ASEFoundation.org](https://ASEFoundation.org).





# Philips Aims to Transform Diagnostic Cardiology with the US Launch of the Cardiac Workstation

*Launching in the US, Philips Cardiac Workstation uses Sophisticated Algorithms to Speed Collection and Processing of ECG Data, Helping Streamline Care and Prioritize At-Risk Patients*

Last year Philips, a global leader in health technology, introduced Cardiac Workstation, a groundbreaking cardiac care platform designed to accelerate clinical decision-making and care for cardiology patients, in Europe, the Middle East and Africa. Philips recently received 510(K) clearance from the FDA making it now available in the US as well.

The Cardiac Workstation uses advanced algorithms to access, analyze, and manage electrocardiograph (ECG) data either remotely or at the point of care. This new technology builds on the cardiograph of the past to help improve diagnostic cardiology by streamlining data collection and reducing administrative workload – allowing care teams to spend more time on direct patient care.



*Clinicians review ECG data on Philips Cardiac Workstation*

“A common theme I hear from care providers and hospital administrators is that they seek ways to alleviate their care teams’ workload without sacrificing the quality of patient care. To achieve that, they need access to the right information

at the right time, wherever their point of decision may be,” said Stefano Folli, Business Leader, Ambulatory Monitoring & Diagnostics, Philips. “That’s the beauty of Philips Cardiac Workstation. It helps streamline workflow using advanced algorithms to access and analyze ECG from anywhere, paving the way to more efficient and effective patient care by enabling clinicians to quickly identify and prioritize the most at-risk patients,” said Stefano Folli, Business Leader, Ambulatory Monitoring & Diagnostics, Philips.

“That’s the beauty of Philips Cardiac Workstation. It helps streamline workflow using advanced algorithms to access and analyze ECG from anywhere, paving the way to more efficient and effective patient care by enabling clinicians to quickly identify and prioritize the most at-risk patients,” said Stefano Folli.

Heart disease remains the leading cause of death globally.<sup>1</sup> Challenges and costs of managing cardiac conditions continue to grow while staff shortages, retention challenges, and expanded training requirements remain imminent. Administrators and clinicians face increasing pressure to efficiently care for this growing population of cardiac patients across a variety of care settings, which requires an end-to-end, broader ecosystem approach. The Cardiac Workstation helps to address these challenges by:

- **Enhancing Workflow** – Gesture-driven interactions like zoom, scroll and swipe functions allow care providers to review and interpret ECGs with the same familiarity as if they were using a smartphone. A simple interface with a three-step workflow also helps clinicians minimize data entry errors and quickly capture, analyze and export accurate ECGs.
- **Providing Clinical Decision Support** – The ability to access and view accurate demographic information and deep clinical data around the patient – such as

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Philips Cardiac Workstation

can interoperate with multiple enterprise systems beyond IntelliSpace ECG or your current departmental systems. Seamless integration with existing electronic medical record (EMR) and system technology allows ECG data to be easily accessed and shared throughout the enterprise. This holistic view of patient data enables care to take place in the most cost-and-clinically-effective setting, while ensuring informed diagnoses and interventions.

Philips' flexible diagnostic, screening and enterprise ECG management solutions advance a new standard of cardiac care, giving healthcare organizations the power to deliver better diagnostics by enabling intervention and treatment in the right setting, at the right time. When leveraging the full strength of the Philips ECG portfolio, care providers can strategically manage the patient population through new, accessible care models informed by healthcare data and actionable insights.

zooming in on views of irregular rhythms or scrolling through multiple ECGs to identify trends – support clinicians in making confident and timely care decisions. When used in tandem with the Philips IntelliSpace ECG management system, clinicians can also view side-by-side comparisons of current and previous ECGs to identify trends and risks.

- **Enabling Enterprise Interoperability** – Designed to be part of a broader ecosystem, Cardiac Workstation

References

1. World health statistics 2024: monitoring health for the SDGs, Sustainable Development Goals. World Health Organization. 2024.



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<https://crtmeeting.org/>

**13<sup>TH</sup>-15<sup>TH</sup>**

**Cardiology Forum 2025**

Kuala Lumpur, Malaysia

<https://cardiologyforum.org/>

**29<sup>TH</sup>-31<sup>ST</sup>**

**Cardiology Forum 2025**

Chicago, IL, USA

<https://accscientificsession.acc.org/en>

## MAY

**01<sup>ST</sup>-03<sup>RD</sup>**

**SCAI 2025 Scientific Sessions**

Washington, DC, USA

<https://calendar.boomte.ch/single/wA8wW2onbK0H9U1J7mL3ux>

**05<sup>TH</sup>-06<sup>TH</sup>**

**CARDIO 2025 - 4th CME Cardiologists Conference**

Istanbul, Turkey

<https://calendar.boomte.ch/single/xA8W2eM6wJ7fK0W2pK0s>

**15<sup>TH</sup>-16<sup>TH</sup>**

**International Conference on Pediatrics and Child Health**

Dubai, UAE

<https://calendar.boomte.ch/single/qA8R5uK0dpdtvwU1M6nweH9R5>

## Program Directory 2024-2025

*Published Mid-August*

**Directory of Congenital & Pediatric  
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**Each program's contact information  
for Chief of Pediatric Cardiology &  
Fellowship Director**

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Pediatric Cardiologists &  
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**Lists Pediatric Cardiology  
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